

SLEEP AND THE DEVELOPING BRAIN

QUESTIONS AND ANSWERS FROM MARY COUGHLIN

Q: Lorraine Warfle: the high metabolic demand you mentioned during sleep... I guess that translates to caloric needs...is this just for the prEemie or on through the first year?

A: The high metabolic demand associated with sleep progresses throughout childhood and even into adolescence. Infants sleep more than any other age group and therefore have a higher caloric demand related to their sleep needs and this is in addition to their general growth needs.

Q: Elsie Vergara from Chile: Mary, I may be confused, but your score 1 sounds a lot like Brazelton's deep sleep... What's the difference?

A: I believe it is very similar and would not suggest that the two are different. The tool was designed for simplicity, introducing the caregiver to the basics of sleep state, providing awareness of the importance of protecting sleep and guiding the clinicians in modifying their care-giving activities around the sleep state of the infant.

Q: Janice Ray from Brigham and Womens Hospital in Boston: please explain the effects of light, especially on younger gestational infants under 32 weeks whose vision system is actively developing

A: Infants less than 37 weeks do not need exogenous (external visual stimulation) for the development of vision; what is critical to appreciate for individuals less than 32 weeks is their papillary reflex is undeveloped and they cannot reflexively constrict their pupil in the setting of too much light so it is crucial to protect these folks from direct light (i.e., following chemical dilation of the eye for an eye exam it is beneficial to protect the eyes with a bili-mask to minimize the discomfort associated with exposure to bright light). There is research to suggest that premature exposure to bright light may be a contributing factor to visual disturbance seen in this patient population outside of ROP.

Q: Sherry White: What about delaying scheduled feedings and nutritive needs when in deep sleep?

A: The sleep cycle of the infant is ~ 60-70 minutes long and the cycle moves from active to quiet sleep. Adjusting a feeding schedule to an infant's sleep cycle actually may provide more opportunity to enhance their nutritional state through more frequent feedings (I have some material that was presented at a recent Graven Conference by Nils Bergman that I would be happy to discuss with you that might assist you in a practice redesign around feeding, ping out if that would be helpful for you. My email address: mec@caringessentials.org. Thanks for your inquiry!

Q: Michelle Miller from Virginia: I am an advocate for appropriate sleep allowance in preterm and term infants and support nurses change in care for this purpose. How can I share this webinar with my coworkers in my workplace?

A: I believe the webinar can be accessed through the Dandle-Lion website. If I can be of any additional assistance, don't hesitate to connect with me: mec@caringessentials.org

Q: Sandra Blackington from The Children's Hospital of: have there been any reliability or validity studies on the Neo-SWAT -- also, is it published ?

A. There have not been any reliability/validity studies on the tool. The tool was piloted in a Level III NICU in Western Europe after we established content validity. If you would be interested in collaborating on an evaluation of the tool please email me: mec@caringessentials.org

Q: Kim Taylor from California: Many times parents and nurses wake sleeping infants to change diapers;

should we discontinue this practice? If so, how should this issue be addressed because many worry about diaper rashes.

A: I totally understand the concern around maintaining skin integrity, what is needed is a more dynamic and relational approach to care; instead of scheduled interactions as the standard, consider the possibility of the schedule serving as a guideline or a framework for care interactions to occur. If an infant's sleep cycle is every 60-70 minutes, coordinate the diaper change with sleep cycle transitions. This approach may in fact reduce nuisance alarms that follow sleep disturbances. There needs to be a shift in focus away from activity driven interactions towards infant driven interactions . Thanks for your inquiry!

Q: Allison Caulfield from HUP: we try to protect our youngest preemies (less than 28 weeks) from light if possible due to lack of pupillary reaction...is this something you support?

A: Absolutely! The pupillary reflex is absent up to 32 weeks and is inconsistently present up to 34 weeks. It is imperative for the health of the infant to protect them from direct light in addition to maintaining an ambient light environment within the recommended ranges. Thanks!

Q: Jeri Power from Arkansas: When caring for infants in a NICU setting, how do you organize "cue based care" and get all of your orders taken care of?

A: Making the transition from a scheduled approach to care to one that is more responsive to the needs and cues of the infant is a journey and requires patience and creativity but with focused effort you can achieve this goal. These types of practice improvement initiatives are what Caring Essentials is all about. Please contact me if you would be interested in a free consultation to assist you in your practice change initiative: mec@caringessentials.org. Thanks for your inquiry!

Q: Deborah K. Egan from The Nebraska Medical Center: according to Dr. Graven, light interferes with auditory development if presented too early. He called it sensory interference. We minimize light until 36-36 wks development

A: This is correct and I applaud your commitment to this developmental need of the patients you serve. I believe the citation you are referring to is: Graven, SN. (2004). Early neurosensory visual development of the fetus and newborn. Clinics in Perinatology, 31(2), 199-216.

Q: Cathleen Carter BSN, RNC-NIC from Fort Worth, Texas: therapeutically sedated / paralyzed infant, clustered care + no or minimal stimulation: any other suggestions to assess DREM: vital signs?

A: This is a true challenge! Sedation and sleep is very complex with lots of evidence suggesting that in a sedated state sleep is disrupted. To truly determine sleep state in this setting I think EEG recordings would be your best tool to assess sleep state. These infants present a genuine challenge to care-givers across all domains of care delivery. I have attached several links to pubmed articles that you may find interesting (maybe not terribly helpful). If you use brain monitoring in your unit, this is probably the best way to determine sleep state for these infants. Thanks for your inquiry!

<http://www.ncbi.nlm.nih.gov/pubmed/21358845> ; <http://www.ncbi.nlm.nih.gov/pubmed/16115967> ; <http://www.ncbi.nlm.nih.gov/pubmed/21324047> ; <http://www.ncbi.nlm.nih.gov/pubmed/16802678>

Q: Karen Wilson from Florida: Thank you for this, but having new residents monthly and MD's that are set in their ways poses a difficulty in implementing this type of supportive care. Any suggestions in bringing about change!!! Thank you

A: It certainly is difficult to make change. One of the key ingredients for successful change is buy-in at the leadership level and to ensure that the change is grounded in evidence/best practice. There is a

movement interested in comparative effectiveness research related to compassionate care and its positive effects on outcomes. The pilot work that I participated in related to the core measures for developmental care demonstrated significant benefit across key short-term and long-term outcomes. I would be happy to discuss this with you and your team.

Q: Jenn Gonya from Nationwide Children's Hospital: Thank you so much for your presentation. Has there been any recent research on elbw infant sleep?

A: I am organizing my reference list for this webinar and will share with the folks at Dandle-Lion for posting next week. Please check out this abstract on pubmed however, you may find it interesting.
<http://www.ncbi.nlm.nih.gov/pubmed/12219056>

Q: Debbie Walls: Great Presentation and as a mother through Adoption of 32 wk twins from PPRM (they are now 24 yrs) a note to please remember Adoptive Parents of patients for giving care information. We did not receive any information from the Agency. Thank you for sharing and your information will be very helpful as I teach Baby Care Classes

A: Thank you for sharing your experience, I will be most mindful to include the adoptive parent in future sessions!

Q: The interaction of family members ranges from one end of the continuum to the other: - Over stimulation continuously by family members wanting the infant to "open your eyes, open your eyes, open your eyes", loud voices, abrupt tactile stimulation, photography flashes - Reluctance to touch or speak to infant, and sometimes not even lift quilted cover on isolette to look at infant due to fear or lack of bonding with infant. Please advise on ways to address these issues without sounding like a lecture. Are there any brief "catch phrases" that may communicate without offending the overbearing or frightening the timid? I have tried teaching by example and encouraging family members sometimes without success. Individualism, culture and many other factors affect these situations. I have seen the same behaviour repeatedly over the years. Human nature does not change as technological advancement does. Parents and family reactions are somewhat predictable for me. I would like a "fresh" idea as I have worked as a staff nurse in the same NICU since 1979. Communication is the most difficult aspect of Family Centered Care. Thank you for your time and attention. I enjoyed listening to your presentation at home on my PC with my pets! Nice.

A: There really isn't a simple catch phrase that can be used to communicate with parents. As you have stated, there are patterns of parental behaviors that range from being very 'aggressive' to very 'passive' when interacting with their critically ill infant. In order to improve the experience for all stakeholders there needs to be a plan that looks at the root causes of these behaviors and then develop an appropriate intervention that meets the needs of the family, the infant and the caregiver. I would be happy to meet with you to explore possible strategies if you are interested. I completely understand the frustration this presents and assure you this is not a unique experience but NICU clinicians around the globe struggle with what you have described. Thanks for sharing your observations and posting your inquiry, I look forward to collaborating with you to improve the experience of care at your facility! My contact email: mec@caringessentials.org

Q: How can I get the NeoSWAT tool and see the vignettes?

A: [Click here to access the videos and interactive quiz that Mary provided](http://moodle.caringessentials.org/)
(<http://moodle.caringessentials.org/>)

You have to sign-in as a GUEST, then click on Miscellaneous Course. [Click here to view Instructions on how to log-in and navigate on Mary's website! \(PDF\)](#) (you might want to do this first).

Once you are in the right place, you will see a screen like this!

The screenshot shows a Moodle course page for 'Caring Essentials Collaborative'. The browser address bar shows 'moodle.caringessentials.org/course/view.php?id=17'. The page has a blue header with the course name and a breadcrumb trail 'Home > DLW1'. On the left, there are several navigation boxes: 'ACTIVITIES' with links for 'Forums' and 'Resources'; 'SEARCH FORUMS' with a search input field and a 'Go' button; 'ADMINISTRATION' with a link 'Enroll me in this course'; and 'COURSE CATEGORIES' with a list of categories: 'Miscellaneous', 'Neonatal_EN', 'Neonatal_NL', 'Adult_EN', 'Neonatal_FR', and 'All courses ...'. The main content area is titled 'TOPIC OUTLINE' and contains a welcome message: 'Welcome to the Quality Caring Institute and thank you for participating in the D...'. Below this, it says 'The following learning activity is designed to provide interactivity with the NeoSWAT. Referring to the NeoSWAT, (a copy is posted on this page), how would you score...'. It then says 'Thanks Mary'. At the bottom of the page, there is a list of course items: 'News forum', 'NeoSWAT', 'NeoSWAT Learning Interactivity', and 'Questions & Feedack'. A purple callout box with a white background and a purple border contains the text 'Click on NeoSWAT Learning Interactivity to View the Videos'. A purple arrow points from this callout box to the 'NeoSWAT Learning Interactivity' item in the list.